80 E I, II

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2020
கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2020
General Certificate of Education (Ord. Level) Examination, 2020

තොරතුරු හා සන්නිවේදන තාක්ෂණය I, II
தகவல், தொடர்பாடல் தொழினுட்பவியல் I, II
Information & Communication Technology I, II

පැය තුනයි
மூன்று மணித்தியாலம்
Three hours

අමතර කියවීම් කාලය - මිනිත්තු 10 යි
மேலதிக வாசிப்பு நேரம் - 10 நிமிடங்கள்
Additional Reading Time - 10 minutes

Use additional reading time to go through the question paper, select the questions you will answer and decide which of them you will prioritise.

Information & Communication Technology I

Note :
* *Answer **all** questions.*
* *In each of the questions **1** to **40**, pick one of the alternatives (1), (2), (3), (4) which is **correct** or **most appropriate**.*
* ***Mark a cross** (X) **on the number corresponding to your choice in the answer sheet provided.***
* *Further instructions are given on the back of the answer sheet. Follow them carefully.*

1. Which of the following contains only input devices?
(1) Multimedia projector, Printer, Keyboard, Mouse
(2) Printer, Keyboard, Touch screen, Joystick
(3) Monitor, Light pen, Multimedia projector, Keyboard
(4) Mouse, Keyboard, Light pen, Joystick

2. The three main functions of an information system are
(1) input, process and output.
(2) code, compile and execute.
(3) design, develop and test.
(4) select, copy and paste.

3. Which of the following represents the units of measurements of data in computer systems in the **ascending** order of their size?
(1) Bit, Byte, Kilobyte, Terabyte
(2) Byte, Bit, Kilobyte, Terabyte
(3) Megabyte, Kilobyte, Bit, Byte
(4) Terabyte, Gigabyte, Megabyte, Kilobyte

4. Which of the following shows the storage devices of a desktop computer in **descending** order of storage capacity?
(1) Register, Cache memory, Hard disk
(2) Hard disk, RAM, Register
(3) RAM, Register, Cache memory
(4) RAM, Cache memory, Hard disk

5. Which of the following are true about the secondary memory of a computer system?
A - Data is not erased even if the computer is switched off
B - Solid state devices can be used as secondary memory
C - Secondary memory is a part of the CPU memory

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

[see page two

6. Which of the following statements are correct regarding the generations of computers?

A - Transistors were introduced in the first generation computers.
B - High-level programming languages were used in the second and third generation computers.
C - Operating systems with graphical user interfaces (GUI) have been used in fourth generation computers.

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

7. Kamalasiri accessed the official web portal of government of Sri Lanka (http://www.gov.lk) to get details about the government web directory. Which of the following service was obtained by Kamalasiri from the Sri Lanka government web portal?

(1) G2B (2) G2C (3) G2E (4) G2G

8. Which of the following contains only the examples of operating systems?

(1) Android, Ubuntu, Windows 10
(2) Ubuntu, Windows 10, Windows Explorer
(3) Android, Windows 10, Windows Explorer
(4) Android, Ubuntu, Windows Explorer

9. Which of the following statement(s) is/are correct?

A - A Graphical User Interface (GUI) provides the facility to use the mouse to execute the commands
B - WIMP stands for Windows, Icons, Menus and Pointer
C - A Command Line Interface (CLI) is more user-friendly compared to Graphical User Interface (GUI)

(1) A only (2) B only (3) A and B only (4) All A, B and C

10. Assume that you are the leader of a team assigned to develop a new information system for your school. Which of the following techniques can be used to identify requirements for this system?

A - Observation
B - Interviews
C - Prototyping

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

11. Which of the following is the correct order of activities in the Software Development Life Cycle (SDLC)?

A - Implementation
B - Requirement identification
C - Design
D - Deployment
E - Testing
F - Maintenance

(1) D, B, C, A, E and F (2) B, D, C, A, F and E
(3) B, C, A, E, D and F (4) B, C, D, A, E and F

12. In the given spreadsheet segment, cells A1 and B1 display values of 40 and 50 respectively. After entering the formula =A$1+B$1 to the cell C1, it displays the value 90 in C1. If the formula in cell C1 is copied to the cells C2 and D1, what will be the values displayed in cells C2 and D1 respectively?

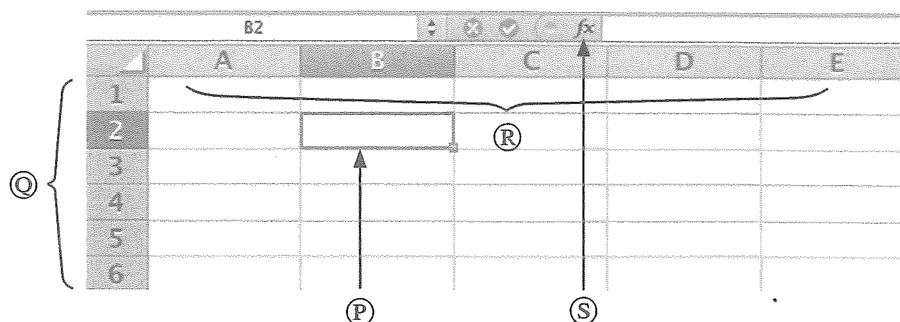
C1 fx =A$1+B$1

	A	B	C	D	E
1	40	50	90		
2					
3					

(1) 90 and 90 (2) 90 and 140 (3) 90 and 50 (4) 50 and 90

[see page three

13. Consider the following spreadsheet segment with four components labelled as Ⓟ, Ⓠ, Ⓡ and Ⓢ.



Which of the following represents the Ⓟ, Ⓠ, Ⓡ and Ⓢ labels in the correct order?
(1) Active cell, Row headings, Insert function, Column headings
(2) Active cell, Row headings, Column headings, Insert function
(3) Insert function, Column headings, Active cell, Row headings
(4) Active cell, Column headings, Row headings, Insert function

14. Which of the following statement(s) is/are correct for a cell range given as C2:E5 in a spreadsheet?
A - Total number of rows in this range is three
B - Geometrical shape of this cell range is a rectangle
C - Total number of cells in this range is 12
(1) A only (2) C only (3) A and B only (4) B and C only

15. Which of the following statements are correct regarding the different types of projectors?
A - Transparent sheets used in overhead projectors always have to be pre-prepared
B - Images can be included in the slides used in a slide projector
C - Electronic presentations made using a computer can be displayed through multimedia projectors
(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

16. Saman has a collection of properly formatted documents prepared using Microsoft Word and Libre Office Writer. He needs to save those documents without any formatting in order to proof read. What would be the most suitable file extension type for this purpose?
(1) .odt (2) .txt (3) .docx (4) .pdf

17. Which of the following statements are correct regarding the presentation software?
A - The animation effects can be applied only to a single object on a given slide
B - Audio recordings can be included in a presentation slide
C - It is recommended to use less than ten text lines in a single slide
(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

18. Which of the following are considered as advantages of electronic databases?
A - Smaller physical space is required to store data
B - Easy to obtain copies
C - More efficient in retrieving information
(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

[see page four

- Questions **19** to **21** are based on the following database tables that are used to store data about authors, books, and the books written by authors.

Table: Author

AuthorID	FirstName	LastName
1001	Anil	Ratnayake
1002	Vijay	Sekaram
1003	Indika	Serasinghe
1004	Sharaf	Khan
1005	Lalith	Wijenayake

Table: Book

BookID	Name	Price
B01	Mathematics with Fun	500
B02	English for Beginners	400
B03	Science for Everyone	450
B04	Western Music	800
B05	Painting Basics	550

Table: Author_Book

AuthorID	BookID	Royalty_Share
1004	B02	15%
1001	B03	20%
1005	B01	10%
1004	B04	15%
1003	B03	10%

19. What would be the primary key of **Author_Book** table?
(1) AuthorID (2) BookID
(3) AuthorID + BookID (4) AuthorID + Royalty_Share

20. Consider the following statements:
A - AuthorID in the Author table is a foreign key
B - AuthorID in the Author_Book table is a foreign key
C - BookID in the Book table is a primary key
Which of the above statements are correct?
(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

21. Who is the author of the book titled "Mathematics with Fun"?
(1) Anil Ratnayake (2) Indika Serasinghe
(3) Sharaf Khan (4) Lalith Wijenayake

22. Which of the following statements is **false** about HTML?
(1) HTML stands for Hypertext Markup Language
(2) Web pages can be created using HTML
(3) HTML tags determine how the web pages are displayed in a web browser
(4) HTML documents are created by using a web browser

23. Which of the following HTML tag pair can be used to make a numbered list?
(1) ul, li (2) dl, dd (3) nl, li (4) ol, li

24. Which of the following statements are correct?
A - Search engines are used to find information on the World Wide Web (WWW) when the relevant URL is unknown
B - SMTP is used to transfer messages between mail servers
C - Web server translates domain names into IP addresses
(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

25. Which of the following statements is **false**?
(1) The Internet is a network of computer networks.
(2) An HTML document which is accessible through the internet is called a web page.
(3) A web page can contain multimedia contents.
(4) The Internet and the WWW are the same.

[*see page five*

26. Which of the following HTML tags and parameters can be used to create the given table?

Name	Tel. Number
Premachandra	019-2220001
	075 - 2233441
Sivaraj	018-6722117
	076-4123789

(1) Table, tr, th, and td with rowspan=2
(2) Table, tr, th, and td with colspan=2
(3) Table, th, td, and tr with rowspan=2
(4) Table, td, tr, and th with colspan=2

27. Which of the following is the correct format of an Email address?

(1) nuwan.senevi.gmail.com (2) nuwan2.senevi@gmail.com
(3) nuwansenevi@gmail_com (4) nuwan@senevi@gmail.com

28. Which of the following statements are true?

A - Digital divide separates hardware into two categories, analog and digital
B - Software piracy is copying of computer programs illegally
C - Digital literacy can reduce the digital divide

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

29. Which of the following statement(s) is/are correct regarding the Malicious software?

A - Trojan horse is a form of spyware
B - Computer worms can spread by themselves
C - Phishing is a technique of displaying unnecessary messages on the computer screen

(1) A only (2) B only (3) A and B only (4) B and C only

30. In which of the following network topology, each computer is **exactly** connected with two other computers?

(1) Bus (2) Ring (3) Mesh (4) Star

31. What is the resolution of an image which is 250 pixels wide and 100 pixels high?

(1) $250 \div 100$ (2) $250 + 100$ (3) 250×100 (4) $250 \times 100 \times 8$

32. Which of the following statements are correct regarding pixels?

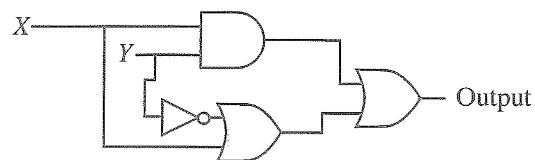
A - Pixels are used to measure the physical dimension of a digital image
B - Number of bits per pixel determine the number of colours in a digital image
C - Pixels of a digital image are arranged in a three-dimensional array

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

33. Which of the following represents the given four numbers in **ascending** order?

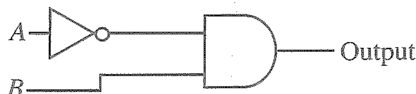
(1) 64_{16}, 226_8, 200_{10}, 101011_2 (2) 101011_2, 64_{16}, 226_8, 200_{10}
(3) 101011_2, 64_{16}, 200_{10}, 226_8 (4) 200_{10}, 226_8, 101011_2, 64_{16}

34. Which of the following Boolean expressions is equivalent to the output of the given logic circuit?



(1) $(x.y)+(\overline{y}+x)$ (2) $(x+y).(\overline{y}.x)$
(3) $(x+y).(x.\overline{y})$ (4) $(x.y)+(y+\overline{x})$

35. Consider the following logic circuit:



Which of the following logic circuits has a truth table equivalent to the above logic circuit?

(1) A, B — Output (2) A, B — Output

(3) A, B — Output (4) A, B — Output

[see page six

36. Which of the following statements are correct regarding programming languages?

A - Pascal and C are examples of high-level programming languages
B - A program written in machine language can be executed directly on the computer
C - Execution speed of the programs written in assembly language is comparatively higher than the execution speed of the programs written in machine language.

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

37. What would be the output of the following Pseudo-code?

```
BEGIN
    sum = 0
    count = 5
    REPEAT
        sum = sum + count*count
        count = count - 1
    UNTIL count > 0
    DISPLAY sum
END
```

(1) 25 (2) 41 (3) 50 (4) 55

38. Consider the following array M in PASCAL language:

M =

10	**20**	**30**	**40**	**50**	**60**	**70**	**80**

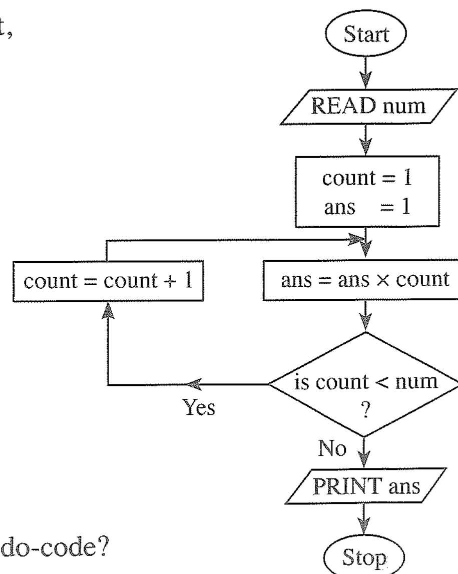
A - array M has a length of 8
B - M[5] has the value 50
C - value of M[1] + M[3] is 60

Which of the above statements are correct?

(1) A and B only (2) A and C only (3) B and C only (4) All A, B and C

39. What would be the output of the given flowchart, if 5 is given as the input for num?

(1) 120
(2) 60
(3) 24
(4) 5



40. What would be the output of the following Pseudo-code?

```
BEGIN
    number = 12
    WHILE number > 5
        IF (number >= 10)
            number = number / 2
        ELSE
            number = number + 4
    ENDWHILE
    DISPLAY number
END
```

(1) 5 (2) 6 (3) 10 (4) 16

[see page seven

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கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2020
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තොරතුරු හා සන්නිවේදන තාක්ෂණය I, II
தகவல் தொடர்பாடல் தொழினுட்பவியல் I, II
Information & Communication Technology I, II

Information & Communication Technology II

* *Answer **five (05)** questions only, including the **first question** and **four** others.*
* *First question carries 20 marks and each of the other questions carries 10 marks.*

1. (i) It has been a common practice to use Learning Management Systems (LMS) to manage both schools and higher education institutes. Write down **two** facilities provided by an LMS for students.

(ii) Consider the following two incomplete statements:

(a) The ....Ⓐ.............. is the primary storage device of desktop computers.

(b) An operating system is an example for ....Ⓑ.............. .

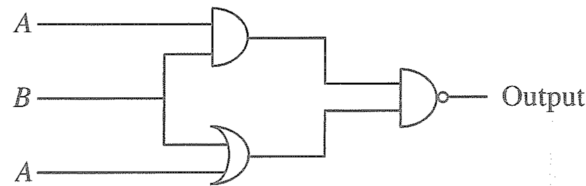
Identify the matching term for each of the labels Ⓐ and Ⓑ from the list of terms given below. Write down the label and the matching term in the **label** → **term** format.

List of terms : {*hard disk, systems software, application software, RAM*}

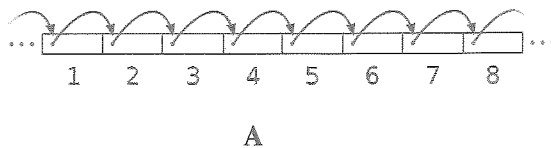
(iii) (a) Convert the octal number 867_8 to its binary equivalent. Show the major steps of your calculation.

(b) If 1011010_2 represents character 'Z' in ASCII code, what is the ASCII code for character 'X'?

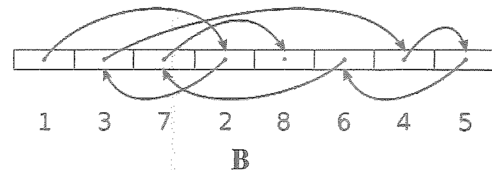
(iv) Draw the truth table for the logic circuit given below.



(v) (a) Following two diagrams illustrate two types of file accessing methods. Write down the file accessing methods represented by **A** and **B**.



A



B

(b) The Operating System identifies file types using file extensions. What is the file extension of a *Powerpoint* file?

[see page eight

(vi) Segment of a word-processed text document is shown below with some formatting done.

> ❶ and ❷ ⟶ **Mahaweli River** ❸
>
> The Mahaweli River is a 335 km long river, ranked as the longest river in Sri Lanka. It has a drainage basin of 10,448 km^2 which is the largest in the country, which covers almost one-fifth of the total area of the island.
>
> Source : https://en.wikipedia.org/wiki/Mahaweli_River ⟵ ❹

Following are the icons of some formatting tools in a word processing software:

Icon of the formatting tool	B	abc			U	X^2	
Icon Label	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ

Identify the icons of formatting tools, indicated by the labels Ⓟ – Ⓥ which are required to do the formatting tasks indicated by the labels ❶ – ❹. Write down the label of each formatting task ❶ – ❹ and its matching icon label of the formatting tool.

(vii) Consider the partly shown *Purchase* database table listing the purchase date and quantities of different items purchased by different suppliers:

Identification number of the Supplier → SupplierID; Identification number of the Item → ItemID; Date of purchasing → PurchaseDate; Number of items purchased → Quantity

SupplierID	**ItemID**	**PurchaseDate**	**Quantity**
S001	1001	02/05/2020	30
S002	1002	05/03/2020	40
S003	1005	25/11/2020	25
S002	1007	05/03/2020	20
S004	1001	12/04/2020	45

(a) Write down the number of fields and records in the above table.

(b) Write down the most suitable data types for *PurchaseDate* and *Quantity*.

(viii) Consider the following Pseudo-code segment with blank spaces labelled Ⓐ to Ⓒ, which calculates and displays the sum of odd numbers between 0 and 10. Write down the suitable expressions for Ⓐ, Ⓑ, and Ⓒ in the **label ⟶ expression** format.

```
BEGIN
    sum = 0
    num = 1
    WHILE [ Ⓐ ]
            sum = [ Ⓑ ]
            num = [ Ⓒ ]
    ENDWHILE
    DISPLAY sum
END
```

[see page nine

(ix) The following table shows some of the formatting tools of the GIMP software.

Icon of the formatting tool				
Icon Number	❶	❷	❸	❹

Identify the suitable description for each of the icons ❶ – ❹ from the **description list** labelled Ⓐ–Ⓓ given below.
Write down each icon number in the above table and its matching description label in the **icon number → description label** format.

Description List : {Ⓐ – Draws free form selections,
Ⓑ – Selects the required area as a circular or elliptical region,
Ⓒ – Create paths to select shapes,
Ⓓ – Paints hard-edged lines}

(x) (a) List **two** advantages of having a Local Area Network (LAN) for a department.

(b) Write the names of **two** types of computer networks according to the geographical distribution.

[*see page ten*

2. (i) For each of the malpractices (labelled Ⓐ–Ⓓ) below, identify the relevant term from the **list of terms** and write down the term against each relevant label in the **label ⟶ term** format.

Label	Malpractices
Ⓐ	Steal important data and information stored on computers without the knowledge of the owner
Ⓑ	Copying and pasting a paragraph to a document from the internet without citing
Ⓒ	An employee using someone else's identity to gain a financial advantage
Ⓓ	Using someone else's innovation for other developments without his/her knowledge

List of terms : {identity theft, intellectual property rights violation, plagiarism, data theft, piracy, spam}

(ii) Write down **four** health-related issues that may occur due to the posture of the person shown in the following diagram.



(iii) Consider the following statements with blank spaces labelled as Ⓐ, Ⓑ, Ⓒ, Ⓓ, and Ⓔ. Identify the most suitable term to fill each blank from the **list of terms** given below. Write down the relevant term against each label in the **label ⟶ term** format.

(a) ....Ⓐ.............. is used to secure data stored in a stand alone computer by blocking unauthorized entry.

(b) ....Ⓑ.............. is essential to safeguard important data in an event of a failure of a computer.

(c) ....Ⓒ.............. is an act of cheating users to collect user names and passwords of electronic bank accounts.

(d) ....Ⓓ.............. can be used to safeguard a computer system from harmful software.

(e) ....Ⓔ.............. enters a computer as an executable file and can erase files.

List of terms : {backup, virus guard, firewall, phishing, password, virus, spamming}

(iv) The following table lists four labels and descriptions related to computer networking.

Label	Description
Ⓐ	Operates as a secured barrier between the Internet and a given network
Ⓑ	Example for a guided transmission media
Ⓒ	Connects two different networks
Ⓓ	Mode of communication used in telephone conversation

Match the most suitable term from the **list of terms** given below and write down the relevant term against each label in the **label ⟶ term** format.

List of terms : {Twisted pair, Full duplex, Half duplex, Gateway, Firewall, Wi-Fi, DNS Server}

[*see page eleven*

3. Following are the partly shown relational database tables that are used to store information about supervisors, projects, and the projects supervised by supervisors in a University.

Table: Supervisor

SupervisorID	FirstName	LastName	DepartmentName
S01	Anil	Priyantha	Computer Science
S02	Mohamed	Nazwar	Chemistry
S03	Raj	Selvam	Physics
S04	Anura	Wijenayake	Computer Science
S05	Keerthi	Nanayakkara	Mathematics
:			
:			

Table: Project

ProjectID	StartDate
P001	05/03/2019
P002	05/03/2019
P003	05/03/2019
P004	05/03/2018
P005	10/04/2020
:	
:	

Table: Supervisor_Project

SupervisorID	ProjectID	Allowance
S01	P003	20,000
S02	P002	10,000
S02	P001	15,000
S04	P001	10,000
S03	P004	12,000
:		
:		

(i) State whether the following statements are TRUE or FALSE.

(a) **SupervisorID** is a foreign key of **Supervisor_Project** table.

(b) **ProjectID** is the primary key of **Supervisor_Project** table.

(ii) Which table(s) need(s) to be updated to accommodate the following changes?

(a) *Anura Wijenayake* is assigned as a Supervisor for the project P002 with an allowance of 10,000.

(b) A new supervisor, *Pradeep Dissanayake* (**SupervisorID**: S06) joined the Department of *Chemistry* and was assigned as a supervisor for an ongoing project (**ProjectID**: P003) with an allowance of 15,000.

(iii) On 15/09/2020, the University started a new project (**ProjectID**: P006) with *Mohamed Nazwar* and *Raj Selvam* as supervisors. An amount of 11,000 is allocated for each supervisor. Write down the new record(s) to be added to the relevant table(s) for the above change. Use the format *tablename* → (*field1*, *field2*, ..) for each record.

(iv) What are the most appropriate tables to be joined to write a query to find the Department name(s) of the supervisor(s) who supervise(s) the project P001?

[*see page twelve*

4. (i) Write down **two** advantages of using SaaS (Software as a Service), which is a cloud computing service, for an institute.

(ii) Match the descriptions labelled Ⓟ–Ⓢ with the correct terms from the list of terms given below and write down the relevant term against each label in the **label → term** format.

Label	Description
Ⓟ	Identifies a computer uniquely on the Internet
Ⓠ	Connects a web page to another web page
Ⓡ	Converts a domain name into an IP address
Ⓢ	Used for the communication between a web server and a web browser

List of terms : {FTP, IP address, Pagelink, SMTP, DNS, URL, HTTP, Hyperlink}

(iii) The HTML source of the web page shown in **Figure 1** is given in **Figure 2** with certain missing tags labelled ❶ to ❿. You are required to write down the label number and the corresponding HTML tag selecting from the list given below.

List : {*h6, h1, alt, title, br, tr, i, td, p, type, rowspan, colspan, th, a, u*}

COVID-19 pandemic

STOP
COVID-19

COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease caused by SARS-CoV-2 virus. It was first identified in December 2019 in Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a pandemic in March 2020.

On average, it takes 5-6 days when someone is infected with the virus for symptoms to show; however, it can take up to 14 days.

Most common symptoms	Less common and Serious symtoms
• fever • dry cough • tiredness • aches and pains • sore throat • headache	▪ diarrhoea ▪ loss of taste or smell ▪ a rash on skin, or discolouration of fingers or toes ▪ difficulty breathing or shortness of breath ▪ chest pain or pressure ▪ loss of speech or movement
Six main recommended preventive measures 1. include social distancing 2. wearing face masks in public 3. hand washing 4. covering one's mouth when sneezing or coughing 5. disinfecting surfaces 6. monitoring and self-isolation for people exposed or symptomatic	

For more information: Covid Prevention Task Force

Figure 1: Web page

[see page thirteen

```
html>
<head>  <❶>  COVID-19 pandemic</❶> </head>
<body>
<❷><center>COVID-19 pandemic</center></❷>
<center>< img src="covid19.png" width="130" height="100"  ❸="Mosquito Photo"></center>

<p>COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of
    coronavirus disease caused by SARS-CoV-2 virus. It was first identified in December 2019 in
    Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency
    of International Concern in January 2020 and a pandemic in March 2020. </p> <❹/>
<p ><❺>On average it takes 5–6 days when someone is infected with the· virus for symptoms to
    show, however it can take up to 14 days.</❺></p>

<table border="4" align = "center">
<tr><th>Most common symptoms</th><th> Less common and Serious symtoms</th></tr>
<❻><❼>
     <ul>
        <li> fever</li>
        <li> dry cough</li>
        <li> tiredness</li>
        <li> aches and pains</li>
        <li> sore throat</li>
          <li>headache </li>
     </ul>
</❼>
<❼>
     <ul ❽="Square">
            <li> diarrhoea</li>
            <li> loss of taste or smell</li>
            <li> a rash on skin, or discolouration of fingers or toes</li>
            <li> difficulty breathing or shortness of breath</li>
            <li> chest pain or pressure</li>
            <li> loss of speech or movement</li>
     </ul>
</❼></❻>
<❻> <td  ❾="2">
 <h2>Six main  recommended preventive measures</h2>
<ol>
   <li> include social distancing</li>
   <li> wearing face masks in public</li>
   <li> hand washing</li>
   <li> covering one's mouth when sneezing or coughing</li>
   <li> disinfecting surfaces</li>
   <li> monitoring and self-isolation for people exposed or symptomatic</li>
</ol>
 </❼></❻>
</table>
<center><h3>For more information: <❿ href="https://www.health.lk"> Covid Prevention Task Force
    </❿> </h3></center>
<body>
</html>
```

Figure 2: HTML Source

[*see page fourteen*

5. The following spreadsheet segment shows some statistics of test cricket players with most Centuries scored.

	A	B	C	D	E	F	G	H	I	J	K
1	**Most Centuries (100s) Scored by Cricket Players**										
2	Player	Span	Matches	Innings	Not Outs	Runs	Highest score	Average	Centuries (100s)	Fifties (50s)	Ducks (zeros)
3	SR Tendulkar	1989-2013	200	329	33	15921	248*		51	68	14
4	JH Kallis	1995-2013	166	280	40	13289	224		45	58	16
5	RT Ponting	1995-2012	168	287	29	13378	257		41	62	17
6	KC Sangakkara	2000-2015	134	233	17	12400	319		38	52	11
7	R Dravid	1996-2012	164	286	32	13288	270		36	63	8
8	Younis Khan	2000-2017	118	213	19	10099	313		34	33	19
9	SM Gavaskar	1971-1987	125	214	16	10122	236*		34	45	12
10	BC Lara	1990-2006	131	232	6	11953	400*		34	48	17
11	DPMD Jayawardene	1997-2014	149	252	15	11814	374		34	50	15
12	AN Cook	2006-2018	161	291	16	12472	294		33	57	9
13	SR Waugh	1985-2004	168	260	46	10927	200		32	50	22
14	ML Hayden	1994-2009	103	184	14	8625	380		30	29	14
15	S Chanderpaul	1994-2015	164	280	49	11867	203*		30	66	15
16	DG Bradman	1928-1948	52	80	10	6996	334		29	13	7
17	MJ Clarke	2004-2015	115	198	22	8643	329*		28	27	9
18	HM Amla	2004-2019	124	215	16	9282	311*		28	41	13
19	SPD Smith	2010-2021	77	139	17	7540	239		27	31	5
20	V Kohli	2011-2021	87	147	10	7318	254*		27	23	10
21	GC Smith	2002-2014	117	205	13	9265	277		27	38	11
22	AR Border	1978-1994	156	265	44	11174	205		27	63	11
23	*Source: https://stats.espncricinfo.com/ci/content/records/227046.html*										
24						Highest Average					

(i) The column H is used to show the Batting Average of each player. The average of a player is calculated by using the formula *=(Runs)/(Innings - Not Outs)*
Write down the formula that should be entered into cell H3 to obtain *SR Tendulkar*'s average.

(ii) Assume that the formula entered to cell H3 is copied to the cell range H4:H22. Write down the formula displayed in the cell H22.

(iii) Write down the steps to display these averages in column H with two decimal places.

(iv) Write down the formula in the form of *=function(cell1:cell2)* that should be entered in cell H24 to find the highest average.

(v) Write down the **most suitable chart type** available in spreadsheet software from the given **List of Charts** for the following:

(a) To show the number of Centuries, Fifties and Ducks obtained by *SR Tendulkar*.

List of Charts for part (a): {Pie, Line, Scatter, Area}

(b) To show the comparisons of the Centuries, Fifties and Ducks obtained by all players in the same chart.

List of Charts for part (b): {Area, Pie, Bar, Scatter}

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6. (i) Consider the following scenario related to the development of a Hotel Management System.

Malani, the Deputy General Manager/IT of *StayHere Hotel* proposed to introduce a new computerized system to the hotel. This is mainly due to the limitations of the existing hotel management system to meet the quality requirements such as performance and security. Malani assigned two programmers, **Nimal** and **Anwer**, to develop the "Room reservation" and "Inventory management" components respectively. After completing these two components, they were merged. **Krishna**, a member of the testing team, was assigned to test the merged version of the system. Afterward, several new components were added to the system. Once the new system is completed, **Pradeepa**, head of the testing team, arranged a testing session with the end-users (Hotel staff) of the Hotel Management System. During this session, most of the end-users requested training sessions to be familiar with the functionalities of the new system. Therefore, it was decided that it is better to run both systems together and terminate the old system only after all end-users are properly trained.

(a) Which type of testing was carried out by Krishna?

(b) Which type of testing was carried out by the hotel staff?

(c) Who carried out Unit Testing of the new Hotel Management System?

(d) The development team used the *Iterative-Incremental* model to develop the new system. State **one** reason to justify this decision.

(e) What type of system deployment approach is used for the above Hotel Management System?

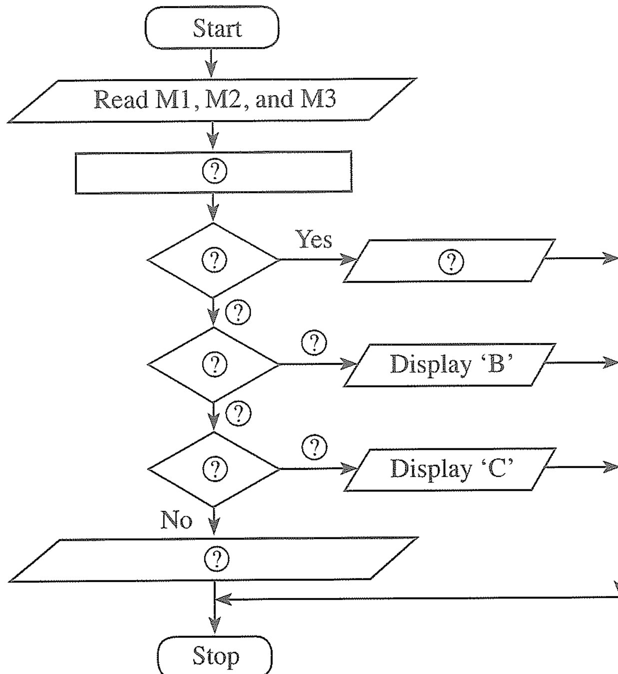
(ii) Nimal logged into an online banking system to transfer money to his son. Nimal entered the account number of his son and the amount to be transferred. The system requested a PIN (Personal Identification Number) to approve the transaction. After verifying the PIN number, the system displayed all the transfer details and obtained the final approval (OK) from Nimal. After successful completion of the transaction, Nimal received an e-receipt.

Write down **two** inputs, **two** processes and **two** outputs of the above scenario.

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7. (i) Write **one** similarity and **one** difference between *Variables* and *Constants* in a computer program.

(ii) The following flow chart is drawn to calculate average marks (avg) and display the grades when marks (M1, M2, M3) of three subjects are given as inputs. The grades are decided according to the following table.



Table

Average marks (avg)	Grade
Greater than or equal to 80	A
Less than 80 and greater than or equal to 65	B
Less than 65 and greater than or equal to 50	C
Otherwise	No Grade

Copy the above flowchart to your answer script and fill the blanks indicated by ? according to the given scenario.

(iii) Consider the following array **A** which contains zeros in all locations.

A[0]	A[1]	A[2]	A[3]	A[4]
0	0	0	0	0

What would be the values of Ⓟ, Ⓠ, Ⓡ, Ⓢ and Ⓣ, after executing the following Pseudo-code on array A.

```
BEGIN
    value = 2
    k = 0
    REPEAT
            A[k] = value
            value = value * 5
            k = k + 1
    UNTIL k < 5
END
```

A[0]	A[1]	A[2]	A[3]	A[4]
Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ

* * *